

Role of Intra Articular Steroid Injection In Early Adhesive Capsulitis of Shoulder.

Dr. Voligi Shekhar, Ms(Ortho)¹, Dr. Gunda Veera Reddy²,

Assistant Professor, Dept Of Orthopaedics, Osmania Medical College, Hyderabad, INDIA.

Abstract: Adhesive capsulitis is a chronic disabling condition common in orthopaedic practise affecting 2-5% of the general population. The ideal treatment protocol for idiopathic adhesive capsulitis or frozen shoulder of the shoulder remains controversial. In the present study, we evaluated the role of intra articular corticosteroids steroid in treatment of adhesive capsulitis. All the patients presenting to us with stage 1 and stage 2 idiopathic adhesive capsulitis were included in the study. A total of 113 patients were enrolled, eight patients failed to complete the study and excluded leaving 105 patients in the study group. Twenty Seven patients with stage 1 and seventy eight with stage 2 comprised our study group. The mean age was 54 years (range: 33 to 81). Sixty-six patients were females and thirty nine were males. Early and prompt recognition of adhesive capsulitis (Stage I and Stage II) and treatment with intra articular corticosteroid may provide a chemical ablation of synovitis, thus limiting the subsequent development of fibrosis and shortening the natural history of the disease. We propose early administration of intra articular steroid in patients that permits rehabilitation and achieve good outcome.

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I. Introduction

Adhesive capsulitis is a chronic disabling condition common in orthopaedic practise affecting 2-5% of the general population. The ideal treatment protocol for idiopathic adhesive capsulitis or frozen shoulder of the shoulder remains controversial. The treatment options documented in the literature include supervised physical rehabilitation [1,2,3,4], nonsteroidal anti-inflammatory medications [5,6], oral corticosteroid [7], intra-articular corticosteroid injection [8, 9], distension arthrography [10], closed manipulation [11,12], open surgical release, and arthroscopic capsular release [13,14]. While surgery has been demonstrated to shorten the natural history of this condition [15], the complications associated with surgery and anesthesia are important considerations. In the present study, we evaluated the role of intra articular corticosteroids steroid in treatment of adhesive capsulitis.

II. Methodology

All the patients presenting to us with stage 1 and stage 2 idiopathic adhesive capsulitis were included in the study following their consent. The diagnosis of adhesive capsulitis was made based on history and clinical exam. Rotator cuff tendinopathy was eliminated based on physical findings, including normal strength and lack of impingement signs. Glenohumeral osteoarthritis and neoplasm were excluded by radiographs. Pain related to the acromioclavicular joint or biceps was ruled out based on lack of tenderness with palpation of these structures. Patients with history of trauma within 6 months from onset of symptoms were excluded from the study. MRI was not obtained routinely as adhesive capsulitis is a clinical diagnosis and we did not feel that the use of MRI was indicated on clinical grounds.

The injection of corticosteroid and local anaesthesia was used both to confirm the diagnosis and stage and for therapeutic treatment. The patients were instructed in simple pendulum exercises and reexamined 15 min following the injection to evaluate pain, determine passive glenohumeral range of motion (ROM), and define the stage of adhesive capsulitis. If the patient had significant improvement in pain and normalisation of motion within 30 min after the injection, this confirmed the diagnosis of stage 1 adhesive capsulitis. If the patient had a significant improvement in pain with partial improvement in ROM, a diagnosis of stage 2 adhesive capsulitis was made. Anti-inflammatory medication was recommended and patients were referred for physiotherapy - ROM exercises of affected shoulder.

All patients presenting with a preliminary clinical diagnosis of stage 1 or stage 2 adhesive capsulitis based on the criteria described above were treated with an intra-articular injection of local anaesthetic and corticosteroid. The glenohumeral joint was injected via a posterior approach using traditional posterior arthroscopic portal landmarks utilising a 20-gauge spinal needle. The skin was anaesthetised and the needle was advanced until the capsule was penetrated. The solution injected contained 5 ml of 1% lidocaine and 80 mg depomedrol. All patients received only one injection.

Patients completed a shoulder rating questionnaire (DASH SCORES) and VAS scores to measure symptoms and disability at final follow-up. Detailed ROM assessments were performed pre-injection, post-injection, and at all subsequent visits by the treating surgeon.

III. Results

A total of 113 patients were enrolled, eight patients failed to complete the study and excluded leaving 105 patients in the study group. Twenty Seven patients with stage 1 and seventy eight with stage 2 comprised our study group. The mean age was 54 years (range: 33 to 81). Sixty-six patients were females and thirty nine were males. Thirty nine patients had diabetes mellitus. The demographic details of the study are given in (table 1)

| PARAMETERS | Study Group |
|------------|--------------------------|
| Age | 54years (33-81) |
| Sex | 39- males 66- females |
| Site | Rt -63 Lt -42 |
| Diabetes | 39 |

Table 1 : Demographic details of the study population.

Pre injection and post injection VAS scores (table 2)

| | Pre injection | Two weeks | 6 Months |
|-------------|---------------|-----------|----------|
| Study Group | 6.96 | 1.43 | 2.4 |

The functional outcome was assessed based on daily activities so we used DASH score to compare pre and post injection (table 3).

| | PRE INJECTION | POST INJECTION (6 MONTHS) |
|-------------|---------------|------------------------------|
| Study Group | 76(84-61) | 42(74- 30) |

IV. Discussion

The shoulder is a very complex joint that is crucial to many activities of daily living. Adhesive capsulitis is a common problem, characterised by decrease in range of motion and pain. The intra-articular corticosteroid injection alone or in combination with physical therapy is most commonly used to treat adhesive capsulitis.[16] Despite its proved efficacy, the timing in relation to staging of adhesive capsulitis was not evaluated properly in the literature.

Steroid injection therapy has been advised in adhesive capsulitis based on the belief that inflammation plays an important role in the pathogenesis.[17] Cytokines have been implicated recently in the inflammation and fibrosis described in adhesive capsulitis. Cytokines are involved in the initiation and termination of repair processes in multiple musculoskeletal tissues, and their sustained production has been shown to result in tissue fibrosis. We hypothesised in this study that early treatment with intra-articular corticosteroid provides a chemical ablation of the synovitis, thus limiting the subsequent development of fibrosis and shortening the natural history of the disease. The self-limiting nature of adhesive capsulitis also supports the role of the synovium in initiation and regulation of the fibrotic process in the capsule. With resolution of the synovitis and termination of capsular scar formation, capsular remodelling and recovery of ROM occurs. This hypothesis is supported by the orthopaedic and rheumatologic literature [7].

39diabetics were seen in the study group depicting DM to be commoner comorbidity. however there was no relation to DM with respective to outcome following intra articular steroid injection. 21 of these patients had significant relief and improved DASH scores (>good) after the steroid injection.[19] There were no complications of intra articular steroid injection in our study group.

The duration of symptoms prior to injection was related to the time to recovery, although this relationship was not statistically significant. This association would also be supported by the basic science research, as a prolonged symptomatic time period would allow for greater capsular fibrosis, which would then lead to a longer time to recovery.

There are several weaknesses in this study. There was no control group, as the author did not feel it was ethically acceptable to not offer corticosteroid injection to patients with stage 1 or stage 2 adhesive capsulitis. While we believe that the stage of a given patient is relatively clear, it is possible that the inter-observer reliability among surgeons for staging adhesive capsulitis might be low. Another limitation of this research is that it is impossible to know with certainty that all injections were indeed intra-articular.

Patients who were treated in stage 1 recovered more rapidly than those in stage 2. However, few patients were seen in stage 1 due to delays related to referral patterns. Prompt recognition of stage 1 and stage 2 idiopathic adhesive capsulitis and early injection of corticosteroid and local anaesthesia are both diagnostic and therapeutic.

V. Conclusion

Early and prompt recognition of adhesive capsulitis (Stage I and Stage II) and treatment with intra articular corticosteroid may provide a chemical ablation of synovitis, thus limiting the subsequent development of fibrosis and shortening the natural history of the disease.

We propose early administration of intra articular steroid in patients that permits rehabilitation and achieve good outcome.

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